

THAT WHICH IS CLAIMED:

1. An apparatus adapted to examine a length of a cigarette paper comprising a pattern including a first band and a second band, the pattern repeating along the length thereof, the apparatus comprising:

a second bobbin configured to be capable of receiving the cigarette paper and to have the cigarette paper advanced thereto and wound thereon after the cigarette paper is unwound from a first bobbin;

a pattern detection device disposed between the first and second bobbins, the pattern detection device being configured to detect at least one of the bands and produce a signal in response thereto; and

a testing device in communication with the pattern detection device and disposed between the first and second bobbins, the testing device being configured to nondestructively determine a property of at least one of the bands in response to the signal.

2. An apparatus according to Claim 1 wherein the second bobbin is responsive to the signal to selectively stop advancement of the cigarette paper to the second bobbin and the testing device is responsive to the signal to determine the property of the at least one of the bands when advancement of the cigarette paper is stopped.

3. An apparatus according to Claim 1 wherein the second bobbin is adapted to be received by a cigarette manufacturing machine such that the cigarette paper wound thereon can be used to manufacture a cigarette.

4. An apparatus according to Claim 1 wherein the testing device is configured to measure at least one of a porosity and a basis weight of at least one of the bands of the cigarette paper.

5. An apparatus according to Claim 1 further comprising a drive system capable of being operably engaged with the second bobbin so as to wind the cigarette

paper thereon, the drive system being operably engaged with the pattern detection device and responsive thereto so as to allow selective advancement of the cigarette paper onto the second bobbin.

5           6.       An apparatus according to Claim 1 further comprising a brake system operably engaged with the first bobbin and configured to cooperate therewith so as to maintain a tension on the cigarette paper between the first bobbin and the second bobbin.

10           7.       An apparatus according to Claim 1 further comprising a paper-engaging member configured to operably engage the cigarette paper between the first and second bobbins so as to maintain a tension on the cigarette paper.

15           8.       An apparatus according to Claim 1 further comprising a controller in communication with the pattern detection device and the testing device, the controller being configured to control advancement of the cigarette paper onto the second bobbin in response to the pattern detection device and to direct the testing device to determine the property of the cigarette paper.

20           9.       An apparatus according to Claim 1 wherein the first bobbin is interchangeable with the second bobbin.

10.       A system for examining a cigarette paper and manufacturing a cigarette therefrom, the system comprising:

25           a cigarette manufacturing device configured to manufacture the cigarette from a length of the cigarette paper, the cigarette paper having a pattern including a first band and a second band, with the pattern repeating along the length thereof; and

30           a cigarette paper testing apparatus adapted to determine a property of one of the bands of the cigarette paper before the cigarette paper is used to manufacture the cigarette, the cigarette paper testing apparatus comprising:

a second bobbin configured to be capable of receiving the cigarette paper and to have the cigarette paper advanced thereto and wound thereon after the cigarette paper is unwound from a first bobbin, the second bobbin being configured to be received by the cigarette manufacturing apparatus so as to provide the cigarette paper thereto;

a pattern detection device disposed between the first and second bobbins, the pattern detection device being configured to detect at least one of the bands and produce a signal in response thereto; and

a testing device in communication with the pattern detection device and disposed between the first and second bobbins, the testing device being configured to nondestructively determine a property of at least one of the bands in response to the signal.

11. A system according to Claim 10 wherein the second bobbin is responsive to the signal to selectively stop advancement of the cigarette paper to the second bobbin and the testing device is responsive to the signal to determine the property of the at least one of the bands when advancement of the cigarette paper is stopped.

12. A system according to Claim 10 wherein the first bobbin is interchangeable with the second bobbin.

13. A system according to Claim 10 wherein the testing device is configured to measure at least one of a porosity and a basis weight of at least one of the bands of the cigarette paper.

14. A system according to Claim 10 further comprising a drive system capable of being operably engaged with the second bobbin so as to wind the cigarette paper thereon, the drive system being operably engaged with the pattern detection device and responsive thereto so as to allow selective advancement of the cigarette paper onto the second bobbin.

15. A system according to Claim 10 further comprising a brake system operably engaged with the first bobbin and configured to cooperate therewith so as to maintain a tension on the cigarette paper between the first bobbin and the second bobbin.

5 16. A system according to Claim 10 further comprising a paper-engaging member configured to operably engage the cigarette paper between the first and second bobbins so as to maintain a tension on the cigarette paper.

10 17. A system according to Claim 10 further comprising a controller in communication with the pattern detection device and the testing device, the controller being configured to control advancement of the cigarette paper onto the second bobbin in response to the pattern detection device and to direct the testing device to determine the property of the cigarette paper.

15 18. A method of examining a length of a cigarette paper having a pattern including a first band and a second band, the pattern repeating along the length thereof, said method comprising:

detecting at least one of the bands with a pattern detection device disposed between the first and second bobbins as the cigarette paper is advanced to and wound on the second bobbin after being unwound from the first bobbin;

20 producing a signal in response to the detection of the at least one of the bands; and nondestructively determining a property of at least one of the bands with a testing device in communication with the pattern detection device and disposed between the first and second bobbins in response to the signal.

25 19. A method according to Claim 18 further comprising selectively stopping advancement of the cigarette paper to the second bobbin in response to the signal and determining the property of the at least one of the bands when advancement of the cigarette paper is stopped.

20. A method according to Claim 18 further comprising installing the second bobbin on a cigarette manufacturing device such that the cigarette paper wound thereon can be used to manufacture a cigarette.

5 21. A method according to Claim 18 wherein nondestructively determining a property further comprises determining at least one of a porosity and a basis weight of at least one of the bands of the cigarette paper with the testing device.

10 22. A method according to Claim 18 further comprising selectively advancing the cigarette paper onto the second bobbin with a drive system operably engaged therewith, the drive system being operably engaged with the pattern detection device and responsive thereto so as to determine the selective advancement of the cigarette paper.

15 23. A method according to Claim 18 further comprising maintaining a tension on the cigarette paper between the first bobbin and the second bobbin with a brake system operably engaged and cooperable with the first bobbin.

20 24. A method according to Claim 18 further comprising maintaining a tension on the cigarette paper with a paper-engaging member configured to operably engage the cigarette paper between the first and second bobbins.

25 25. A method according to Claim 18 further comprising controlling advancement of the cigarette paper onto the second bobbin, in response to the pattern detection device, with a controller in communication with the pattern detection device and the testing device.

30 26. A method according to Claim 18 wherein nondestructively determining a property further comprises directing the testing device to nondestructively determine the property of the cigarette paper with a controller in communication with the pattern detection device and the testing device.

27. A method according to Claim 18 further comprising removing the second bobbin and replacing the second bobbin with the first bobbin.

28. An apparatus adapted to examine a length of a cigarette paper having  
5 opposed ends and comprising a pattern including a first band and a second band, the pattern repeating along the length thereof, the apparatus comprising:

a driven roller device configured to receive one of the ends and to advance the  
length of the cigarette paper in a machine direction;

a tension device configured to operably engage the cigarette paper prior to the  
10 driven roller device, with respect to the machine direction, and to cooperate with the driven roller device so as to maintain a tension on the cigarette paper therebetween;

a pattern detection device disposed between the driven roller device and the  
tension device, the pattern detection device being configured to detect at  
15 least one of the bands and produce a signal in response thereto; and

a testing device in communication with the pattern detection device and disposed  
between the driven roller device and the tension device, the testing device  
being configured to nondestructively determine a property of at least one  
of the bands in response to the signal.

29. An apparatus according to Claim 28 wherein the driven roller device is  
responsive to the signal to selectively stop advancement of the cigarette paper and the  
testing device is responsive to the signal to determine the property of the at least one of  
the bands.

30. An apparatus according to Claim 28 wherein the testing device is  
configured to measure at least one of a porosity and a basis weight of at least one of the  
bands of the cigarette paper.

31. An apparatus according to Claim 28 further comprising a controller in  
communication with the pattern detection device and the testing device, the controller

being configured to control advancement of the cigarette paper by the driven roller device in response to the pattern detection device and to direct the testing device to determine the property of the cigarette paper.